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LXXIV.—ARACEÆ.

253. *Arisæma* Martius.

412. *A. triphyllum* Torr.....B

413. *A. dracontium* Schott.....B

LXXV.—ALISMACEÆ.

254. *Alisma* L.

414. *A. plantago* L.....B

255. *Sagittaria* L.

415. *S. variabilis* Engl. Reported from
Wellsville.

LXXVI.—GRAMINEÆ.

256. *Spartina* Schreber.

416. *S. cynosuroides* Willd.....A

257. *Panicum* L.

417. *P. sanguinale* L.....K

418. *P. proliferum* Lam.....D

419. *P. capillare* L.....A

420. *P. virgatum* L.....A

421. *P. clandestinum* L.....B

422. *P. depauperatum* Muhl.....A

423. *P. crus-galli* L.....B

258. *Setaria* Beauv.

424. *S. glauca* Beauv.....Everywhere

425. *S. viridis* Beauv.....Everywhere

259. *Leersia* Swartz.

426. *L. virginica* Willd.....B

260. *Andropogon* Royen.

427. *A. furcatus* Muhl.....A

261. *Chrysopogon* Trin.

428. *C. nutans* Benth.....A

262. *Phalaris* L.

429. *P. arundinacea* L.

263. *Aristida* L.

430. *A. oligantha* Mx.

264. *Muhlenbergia* Schreber.

431. *M. diffusa* Schreber.

265. *Phleum* L.

432. *P. pratense* L.....Everywhere

266. *Alopecurus* L.

433. *A. geniculatus* L.....F and B

267. *Cinna* L.

434. *C. arundinacea* L.

268. *Bouteloua* Lagasca.

435. *B. oligostachya* Torr.....A

436. *B. racemosa* Lag.....A

269. *Eleusine* Gaertn.

437. *E. indica* Gaertn.....K

270. *Triodia* R. Bv.

438. *T. cuprea* Jacq.

271. *Eragrostis* Beauv.

439. *E. major* Host.....K

440. *E. pectinacea* Gr.....A and K

272. *Melica* L.

441. *M. diffusa* Pursh.

273. *Uniola* L.

442. *U. latifolia* Mx.....D

274. *Poa* L.

443. *P. compressa* L.....B

444. *P. pratensis* L.... Fields, common

275. *Bromus* L.

445. *B. secalinus* L.....Wheat fields

276. *Elymus* L.

446. *E. virginicus* L.....B

447. *E. canadensis* L.....C

LXXVII.—FILICES.

277. *Notholaena* R. Br.

448. *N. dealbata* Kunze.....B

278. *Pellaea* Link.

449. *P. atropurpurea* Link.....B

279. *Camptosorus* Link.

450. *C. rhizophyllum* Link.....B

280. *Cystopteris* Bernh.

451. *C. fragilis* Bernh.....B

LXXVIII.—OPHIOGLOSSACEÆ.

281. *Botrychium* Swartz.

452. *B. virginianum* Swartz... ..B

THE RELATIONS OF THE COMPOSITE FLORA OF KANSAS.

A. S. HITCHCOCK, MANHATTAN.

The flora of Kansas is essentially that of the plains, though the Mississippi valley flora mingles to a very perceptible degree in the extreme east. In studying the relations of the Kansas flora, the order Compositæ was selected as being better suited to represent these relations than any other order, or group of orders, comprising an equal number of genera. The Compositæ are widely distributed over the whole world.

They are found in all climates, in all soils, and at all altitudes. It is thought, therefore, that the conclusions reached in regard to Compositæ will be fairly applicable to the whole flora of Kansas, and what is true of Kansas in this respect is probably equally true of the plains to the south and north for several hundred miles.

The 62 genera which I know to be represented in Kansas have been arranged in the table given below. In column 1, are the genera; in column 2, are checked those which occur in Mexico; in column 3, those which occur in the region east of the Mississippi river and north of Kentucky and Virginia; in column 4, those found in our southern flora, from the above region to the Gulf; in column 5, those occurring in the Rocky Mountains; in column 6, those found in Mexico and throughout the United States; in column 7, those found on the plains, and would include those which are not confined to the eastern fourth of the State

	Mexico.....	N. E. U. S. ...	S. E. U. S. ...	Rocky Mts. ...	Mex. & U. S. ...	Plains.....		Mexico.....	N. E. U. S. ...	S. E. U. S. ...	Rocky Mts. ...	Mex. & U. S. ...	Plains.....
Elephantopus	X	X	X	...	...	X	Rudbeckia.....	...	X	X	X	...	X
Vernonia.....	X	X	X	...	...	X	Lepachys.....	...	X	X	...	...	X
Eupatorium.....	...	...	...	...	X	...	Helianthus.....	...	...	...	...	X	...
Kuhnia.....	X	X	X	...	X	X	Verbesina.....	X	X	X	...	...	...
Liatris.....	X	X	X	...	X	X	Actinomeris.....	X	X	X	...	...	...
Gutierrezia.....	X	...	...	...	X	X	Coreopsis.....	X	X	X	...	...	X
Amphiachyris.....	X	...	...	...	X	X	Bidens.....	X	X	X	...	...	X
Grindelia.....	X	...	...	...	X	X	Thelesperma.....	X	...	...	...	...	X
Heterotheca.....	X	...	X	...	X	X	Marshallia.....	...	...	X	...	...	X
Chrysopsis.....	...	...	...	...	X	...	Bahia.....	X	...	...	X	...	X
Aplopappus.....	X	...	...	...	X	X	Hymenopappus.....	X	...	X	...	...	X
Solidago.....	...	...	...	...	X	...	Actinella.....	X	...	...	X	...	X
Aphanostephus.....	X	...	...	...	X	...	Helenium.....	X	X	X	...	...	X
Boltonia.....	...	X	X	...	...	...	Gaillardia.....	X	...	X	...	...	X
Townsendia.....	...	...	...	X	X	X	Dysodia.....	X	...	...	...	...	X
Aster.....	...	...	...	...	X	...	Anthemis ¹.....	...	...	...	...	...	...
Erigeron.....	...	...	...	...	X	...	Achillea ².....	...	...	...	...	...	...
Evax.....	X	...	...	...	X	X	Artemisia.....	...	...	...	...	X	...
Antennaria ³.....	...	...	...	...	...	...	Senecio.....	...	...	...	...	X	...
Gnaphalium.....	...	...	...	...	X	...	Cacalia.....	...	X	X	...	...	...
Polymnia.....	X	X	X	...	...	...	Erechtites.....	X	X	X	...	...	X
Silphium.....	...	X	X	...	X	...	Arctium ¹.....	...	...	...	...	...	...
Engelmannia.....	X	...	...	...	X	X	Cnicus.....	...	...	...	...	X	...
Iva.....	X	X	X	...	X	X	Hieracium ².....	...	...	...	...	...	...
Ambrosia.....	...	...	...	X	X	...	Prenanthes ².....	...	...	...	...	...	...
Franseria.....	X	...	...	X	X	X	Lygodesmia.....	...	...	...	X	...	X
Xanthium ¹.....	...	...	...	...	...	...	Troximon.....	...	...	...	...	...	X
Eclipta.....	X	X	X	...	...	...	Taraxacum ².....	...	...	...	...	...	...
Zinnia.....	X	...	...	...	X	...	Pyrrhopappus.....	X	...	X	...	...	X
Heliopsis.....	X	X	X	...	X	...	Lactuca.....	...	X	X	...	...	...
Echinacea.....	...	X	X	...	X	X	Sonchus ¹.....	...	...	...	...	...	...

The four genera marked ⁽¹⁾ are introduced. These, together with the following 11 genera, which are found widely distributed throughout the United States and into Mexico, or even as far south as Chili, can be disregarded in the present discussion: Eupatorium, Chrysopsis, Solidago, Aster, Erigeron, Ambrosia, Helianthus, Artemisia, Senecio, Cnicus, and Gnaphalium. At least two of these, Artemisia and Gnaphalium, are probably southern extensions of northern forms.

The following are Rocky Mountain genera, not extending east of the plains: Townsendia, Franseria, Bahia, Actinella, Lygodesmia, and Troximon. Three of these also extend into Mexico.

Five genera, marked ⁽²⁾ in the list, are of wide northern distribution, and extend southward along the mountains or through eastern United States: Antennaria, Achillea, Hieracium, Prenanthes, and Taraxacum.

There is no genus common to Kansas and the northeast region which is not also found in the southeast region.

Of the eastern genera, seven extend into Kansas but do not reach Mexico: *Boltonia*, *Silphium*, *Echinacea*, *Lepachys*, *Cacalia*, *Lactuca*, and *Rudbeckia*. The latter extends into the Rocky Mountains. These genera are but sparsely represented on the plains, being found in Kansas mostly in the eastern part.

Fifteen Eastern genera extend into Mexico, but not west of the plains: *Elephantopus*, *Vernonia*, *Kuhnia*, *Liatris*, *Heterotheca*, *Polymnia*, *Iva*, *Eclipta*, *Heliopsis*, *Verbesina*, *Actinomeris*, *Coreopsis*, *Bidens*, *Helenium*, and *Erechtites*.

Four genera of the southeast region extend as far north as Kansas, and all but the first also into Mexico: *Marshallia*, *Hymenopappus*, *Gaillardia*, and *Pyrro-pappus*.

Ten genera are common to Mexico and the plains, but are not found in the other regions. These 10 genera, many of which are not found north of Kansas, throw much light on the relation of the Kansas flora. These genera are: *Gutierrezia*, *Amphiachyris*, *Grindelia*, *Aplopappus*, *Aphanostephus*, *Evax*, *Engelmannia*, *Zinnia*, *Thelesperma*, and *Dysodia*.

This relation is shown in a different form by the following summary of the 47 genera under consideration:

Common to Kansas and Mexico, 31 genera.

Common to Kansas and northeast region, 23 genera.

Common to Kansas and southeast region, 28 genera.

Common to Kansas and Rocky Mountains, 8 genera.

We see from these tabulations that our flora has more in common with Mexico than any other region. Ten genera have extended only along the plains; three, also, into the Rocky Mountains; three along the plains and into the southeast region; 15 have spread more or less throughout eastern North America. Geographically, Kansas is much more closely related to the portion of the United States east of the Mississippi than it is to Mexico, yet we have only seven genera common only to the two former, while we have 10 common only to Kansas and Mexico. The small number of northern and mountain genera is also very noticeable.

This relation of the Kansas flora to the Mexican is undoubtedly closely connected with the receding of the glacial epoch. As the arctic forms withdrew northward or into the mountains, their place was taken by forms from the south. As was pointed out by Doctor Watson (*Proc. A. A. A. S.*, vol. XXXIX), the Mexican flora is more closely related to not only the plains, but the whole Atlantic region, than to the Pacific or Great Basin regions. Doctor Britton (*l. c.*) arrives at the same result by a tabulation of the orders of phanerogams.

SOME NOTES ON CONDENSED VEGETATION IN WESTERN KANSAS.

BY MINNIE REED, MANHATTAN, KAS.

It is a well-known fact that the geographical position of a plant determines its habits and peculiarities of appearance; that is, we expect to see a certain kind of vegetation in the tropics, another in the temperate zone, and still another in the frigid, just as we expect to see different races or types of the human family in the different zones. This variation of plants in different localities of the same zone is almost as striking in some instances, and often plants belonging in the same family, or even the same genus, are frequently so different in appearance as to be almost unrecognized by the amateur botanist.

Take, for instance, the mountain and valley flora, or those of the swamp and arid,